COMPUTERWORLD

THE NEWSWEEKLY FOR THE COMPUTER COMMUNITY

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It's Here at Last!

Cobol Standard Wins Approval, Now Official Business Language

NEW YORK – Cobol became an official U.S. standard language last week when members of the American Standard Committee voted in its favor with no negatives.

There were two abstentions because final copies of the standard were not available at the meeting. The editing committee had not completed its work, and some members felt that, in view of the problem of typographical errors, they would have preferred to delay the vote until they had seen a final copy.

It was generally anticipated that the government would now move quickly to require the use of standard Cobol on computers being used by the government.

Nine Years' Work

Thus ended the long path started in 1959 when the original Cobol manual was drafted with the backing of the Department of Defense. Since then, successive Cobols have been more or less officially documented, such as Cobol 60, 61, and 65, and have been published by the Government Printing Office. By and large, these manuals have formed the basis of an on-going standard language. The approved standard is basically the same as the proposed Cobol standard that has been around for over a year and, indeed, has been implemented on some of the computer systems announced this year. It has relegated the random access portion of the standard into an appendix in deference to some opinions that this is not an appropriate part of the current standard.

Subset Cobol Demonstrated

At the ACM conference, the first official standard Cobol compiler was unveiled by NCR. The NCR Century computers, due for their first deliveries in September, use the standard ASCII code internally. The first phase of the NCR compiler, which is said to be completely upward compatible with any other standard Cobol compiler, was being demonstrated throughout the show. However, this compiler does not yet come up to the minimum vocabulary that is required by the multi-use level of the new standard Cobol.

Three Levels in Standard

The standard provides for three different levels of increasing sophistication and a compiler will be expected to include all the elements in a specific level. Some work

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AT&T Sets Standards for Modems, Other Equipment Supplied by Users

NEW YORK – American Telephone & Telegraph Co has filed with the Federal Communications Commission what it describes as "new, liberalized tariff regulations which would allow more customer provided equipment to be connected to the telephone network."

The operating companies of AT&T have filed similar tariff requests with the various state regulatory agencies so that if the tariffs go into effect Nov. 1 as planned, they will apply to both interstate and intrastate uses.

Principal beneficiaries of the new tariffs will be users who transmit large amounts of data and users of remote time sharing services.

New Ground Rules

According to AT&T, the new provisions would:

- Permit the direct electrical connection of customer data equipment, such as computers, to the telephone system "through a simple, inexpensive protective device provided by the telephone company."
- Allow the acoustic or inductive connection of private mobile radiotelephone systems to the telephone network through customer provided connecting devices.
- Permit the acoustic or inductive connection to the network of any customer provided voice or data transmitting or receiving device.
- Allow direct electrical connection of customer provided voice transmitting or receiving equipment "through a telephone company connecting arrangement."

"Our proposed new tariffs are . . . one more step in our continuing efforts to make the public telephone network more freely available and useful for more purposes," AT&T President Ben S. Gilmer said at a press briefing here announcing the proposed new tariffs. "It is the Bell System's intent to be as responsive as possible to changing communications needs and technology."

"We believe that these new regulations will open up . . . new opportunities for the many fine companies that are making and marketing information handling devices," AT&T Board Chairman H.I. Romnes told newsmen.

Changed Attitude

The attitude of the two men, as expressed at the briefing, was in marked contrast to the company's position when it argued unsuccessfully before the FCC that the foreign attachments ban should be allowed to stand.

As the result of a case brought by the Carter Electronics Co. of Dallas, Texas, the FCC, in a June 27 decision, declared that the ban on nontelephone company supplied equipment was unlawful, and invited AT&T to file new tariffs.

AT&T won a temporary stay and has pending before the FCC a request for

(Continued on Page 16)

Product Sells, Company Unhappy

The sole user of this TV studio switching system says it works "very well," but the manufacturer doesn't want to make any more like it.

HARRISBURG, Pa. – Success can sometimes be more trouble than it is worth. At least, that seems to be the conclusion of AMP, Inc. here.

The company built what it describes as the "best [computerized] system to date" to handle audio and visual switching functions in a television station. A midwest station that owns the only model ever produced told *Computerworld* that the system works "very well."

AMP Now Wants Out

However, after receiving "several hundred valid inquiries" following demonstration of a prototype model at the April National Association of Broadcasters show in Chicago, AMP now reports that it does not want to manufacture the system, is not accepting orders, and is looking for someone to sell the line to.

Linked to a master clock system, the system uses a Digital Equipment Corp. PDP-8 computer as the control processor,

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Arthur N. Rosenberg, conference vice chairman, addresses the opening session.

Attendance Low, Program Ragged At ACM's Show

LAS VEGAS, Nev. – Official figures showed an attendance of 2700 people at the ACM conference, which included exhibitors, exhibit personnel, and all types of registrants. This was 10% under the number expected, and the difference was noticeable. Arthur Rosenberg, conference vice chairman, told *Computerworld* that he believed the reason for the poor attendance was that the ACM had not realized that it should no longer serve only academic society, but the industry as well.

"We must consider the practical matters and not tie ourselves to university semesters," he said.

Pointing out that the session was not the only computer conference, he appealed for some control on the conduct and scheduling of the various computer conferences to assure that they got good programs and good attendance.

The papers presented included good as well as bad. One objection raised by a number of people involved the unevenness within some sessions. For instance, the Thursday session started off with a paper by Susan Brewer which explained a binary

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Computer Sciences Firm Is Created By LTV Aerospace

DALLAS, Texas – LTV Aerospace Corp. has spun off three of its operations into a new company, Computer Technology Inc. (CTI), which will offer "a diversified range of computer related products and services."

CTI, 70% owned by LTV Aerospace and 27% owned by Ling-Temco-Vought, Inc., will combine the Dallas based facilities, resources, personnel, and business backlog of the LTV Computer Center, LTV's Aerospace Computer Sciences Services, and the Service Technology Corp.

G.W. Woerner, Jr., formerly vice president and midwestern regional manager of IBM's Data Processing Division, has been named president of CTI. Two other top IBM marketing executives also will join CTI's management, CIT announced. Their names were not disclosed.

G.W. Woerner, Jr.

$80 Million Backlog

CTI will begin operations with a backlog of more than $80 million in work, not counting LTV work, the company said.

CTI will have a staff of 2000 persons experienced in programming, systems analysis, system operation, and management services, the company said.

No detailed information was released on the products and services planned by the new LTV Aerospace subsidiary.

SCC Orders EM Memories

HAWTHORNE, Calif. – Scientific Controls Corp., Dallas, has signed a $2.5 million, three year contract with Electronic Memories, Inc., here for EM's 2-1/2D core memory stacks.

EM also announced it had granted SCC a license to use EM core memory design techniques in its general purpose computers.

The memories ordered will be used initially in the SCC 4700 general purpose computer. This will be a small, 16 bit machine with a 920 nanosec. memory cycle.

The SCC 4700, designed for real-time scientific and control applications, will have a 4K memory expandable to 64K, EM said.

Army Orders 85 Systems To Handle Parts Records

DAYTON, Ohio – The Army, which has sent 52 mobile computers to Southeast Asia to handle stock accounting records for repair parts, has signed a contract with National Cash Register Co. for the rental of 85 additional systems.

The automated stock accounting program – now being expanded by the Army beyond the war theater scope – is built around the NCR Series 500 computer. Planning calls for as many as 400 of the computers to be in use throughout the Army by 1973, an Army spokesman said.

In Vietnam, transportable van mounted data centers are assigned to Army logistical units. Each installation keeps track of approximately 10,000 to 30,000 different repair parts items to insure that the parts are available when needed.

The order for 85 systems represents an equipment value of about $4 million and is the largest single order received to date for the Series 500 computers, NCR says.

Previous Army orders for the traveling computer centers have totaled 58 systems.

Primarily the systems will be used for stock accounting and the materiel control of repair parts. Accounting for other supply functions is to be added later.

Six NCR technical service representatives are currently in Vietnam to help Army personnel support the system.

King Arthur's Court Found?

Computer Joins the Search for Camelot

LONDON, England – A computer has now joined in the search for Camelot, the court and military base of King Arthur, traditionally equated with South Cadbury Hill in Somerset.

The computer – a KDF 9 in the Bureau Division of International Computers Ltd. – is being used to process the results of a geophysical survey of a 40 meter square within the ramparts of the South Cadbury Hill fort and of a 310 meter traverse going right across the hill.

The object is to test out some theories before Leslie Alcock and his team commit themselves to any large scale excavation in these areas. Archaeological decisions are being made on the basis of the computer results to help guide the digging.

Survey Began Last Year

The use of geophysical instruments to carry out survey of the 18 acres of grassland that lie within the ramparts at South Cadbury began last year. When moved over the surface of the ground, these instruments give readings that can be expressed as dot density patterns to suggest the actual shape and pattern of buried archaeological features.

One hundred thousand readings were taken and these indicated many ancient storage pits and the ring ditches of several round houses of the Iron Age. They also indicated what appeared at the time to be two or three rectangular buildings. The present computer processing is aimed at refining the overall manual interpretation to a degree that would not otherwise be possible. It is thought that the computer will prove especially useful in emphasizing the smaller features, such as post holes, on the site as well as defining any linear features and rectangular building foundation trenches which are most pertinent to the Dark Age period of investigation.

The readings being submitted to the computer are from an instrument called a proton magnetometer. This is essentially a very sensitive device for measuring the earth's magnetic field. It employs a principle of operation based on the free precession of protons.

Magnetic Field Modified

The basic magnetic field of the earth is modified on an archaeological site by buried pits, ditches and, in particular, by any thermo-remanent material such as kilns and hearths. Since pits usually contain the dating material (potsherds, rubbish, etc.) for a site and hearths, of course, indicate occupation, the technique is very important in modern archaeology and has already found many important sites.

The magnetic field of the earth exhibits a diurnal cycle which must also be taken into account unless a differential proton magnetometer employing two detectors – one high in the air to measure the mean magnetic field and one near the ground to measure archaeological variations – is used. In the present case, the diurnal variations have been taken into account by the computer analysis.

In essence, the computer averages all the readings for the areas in question and prints out a list giving variations from the mean. In general, the highest variations, both positive and negative, indicate the most interesting features, although the pattern of variation for features is usually complex.

About 120 people each week for the six weeks of this year's dig are working on the South Cadbury site near Sparkford on Route A303 to the north of Yeovil. What the excavations revealed beyond doubt last year was that Cadbury had been refortified some time in the fifth or sixth century with a rampart of stones and soil probably reinforced with timberwork. This gives some credence to the legend linking South Cadbury with King Arthur: at least it shows that the site was a center of resistance to the Saxon invasion.

Cobol Standard Wins Approval

(Continued from Page 1)

has been proceeding in the Navy Department to enable users to examine their Cobol programs to determine what level of compiler they need.

Fortran Standard

The Cobol standard is not the first computer language standard. A Fortran standard was already in existence. But because of the comparative sophistication of the data descriptions involved in commercial type processing, the Cobol standard is undoubtedly the most sophisticated language standard currently available.

International Considerations

It is expected that the new standard will be supported internationally and that changes in individual countries will be minimized insofar as possible. For the international standardization of Cobol, the U.S. has been acting on behalf of the International Standard Organization.

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Unit Reads Machine Tapes, Puts Data on Computer Tape

DAYTON, Ohio – The National Cash Register Co. has introduced a system that reads cash register and accounting machine tapes and writes the data on magnetic tape for computer input.

The 420-739 system consists of an optical scanner linked to a 9 channel, 800 bpi tape handler with a 180 character buffer and a 64 character keyboard for formating, tape labeling, and file updating. The scanner reads NOF (NCR optical font) tapes only.

NCR said monthly rent for the system starts at $1400.

NCR Marketing Vice President T.E. McCarthy said that the conversion package, for use in any business that operates a minimum of four keypunches, is compatible with most EDP systems.

Why Off-Line?

NCR said the equipment configuration permits data recorded on optical font journal tapes from cash registers, adding machines, and accounting machines to be entered into a computer at high speed. The scanner which reads the tapes transcribes the data onto magnetic tape so that the data is compiled off-line while the computer processor is performing other work.

The information is subsequently read into the computer whenever the processor is free. Feeding the data directly into the processor at optical scanner speeds would tie up costly computer time, NCR said.

The data conversion approach is applicable in a variety of operations where data generated by sales registers, adding machines, or other input units must be read into a computer, the company said.

Approximately 45,000 NCR business machines are currently producing 45 million lines of NOF data daily, according to the company.

Laser Computers Could Be Up to 100 Times Faster

NEW YORK – RCA has developed a light switching device which it claims could pave the way for laser computers that would be 100 times faster than current data processing systems.

Experiments with a new semiconductor laser device, called an "inverter," have shown that infrared laser light signals could replace electric signals in the control and operation of computers and could have a potential operating speed of a trillion bits of information per second.

However, significant advances in semiconductor fabrication techniques would be required before any such laser computer systems could be achieved, according to Dr. Jan Rajchman, staff vice president, data processing research, at RCA Laboratories, Princeton, N.J.

Faster Flip-Flops

Rajchman said that laser light signals can be turned on and off much faster than electric currents and are not affected by the inductance and capacitance that slow down electric circuits. Pulses as short as 10 picoseconds (trillionths of a second) generated by semiconductor lasers have been reported, he added.

In the past, increasing the speed of data processing has led to more computations per dollar and permitted the solution of more sophisticated problems. Laser computers may be the ultimate in this trend, he said.

The research results were summarized in a technical paper "Lasers for Logic Circuits," presented by Dr. Walter F. Kosonocky of RCA at the Wescon meeting in Los Angeles last month.

The paper described related work done by both Russian and American scientists as well as the laser devices developed at RCA Laboratories to demonstrate the feasibility of such an approach.

"The essential question that still must be answered is how to construct and interconnect some reasonable number of such devices," Kosonocky said. Techniques similar to those used for fabricating integrated circuits could be employed in producing laser logic circuits, but the processing requirements are just beyond today's state of the art in semiconductor fabrication, he said.

On-Line System Growth Predicted

FRAMINGHAM, Mass. – The number of installations of small on-line computers for data communications will almost triple to more than 6500 by 1970, according to T. Paul Bothwell, vice president and general manager of Honeywell's Computer Control Division.

Bothwell predicts that computer shipments will continue to rise by 500 to 1500 units a year from 1971 until 1975. In 1975, he expects 50,000 to 60,000 computer installations, both large and small, to be in existence.

Processors linked to data communications channels and systems will represent about half of all U.S. computer installations in 1975, he said.

Until 1970, growth in computer communications will come primarily from the federal government, large manufacturers, universities, and computer service bureaus, he said.

But after 1970, Bothwell said, public school systems, banks, airlines, railways, and hospitals will also be major users.

NCR to Market Tally Tape Units

SEATTLE, Wash. – Telly Corp. has reached an agreement with the National Cash Register Co. under which NCR will market business data transmission equipment manufactured by Tally to NCR's specifications. First deliveries are expected before the end of the year.

The units involved consist of punch tape transmitting and receiving terminals. The transmitters relay the data on the tapes via ordinary dial up telephone lines to any central computer facility. Transmission speeds vary from 72 to 120 cps.

The agreement gives NCR exclusive marketing rights to the equipment, except for Tally's own marketing organization which will continue to sell the units.

$35 per Month Rental

Rental rates for the data transmitter will start at approximately $35 a month, NCR said, and for the receiving terminals at approximately $130. Purchase prices were not given.

NCR said that in some cases, receiving units would not be needed as some computers can accept transmitted data directly on-line without recreating the punch tapes at the receiving end.

Prize Winner

This new IBM storage container for IBM Series 500 tape won the Pacesetter award at the Western Electronic Show and Convention last month. The container, less than an inch thick, has beveled edges and a pushbutton latch.

Multiplexing Can Cut Costs Of Time Sharing Services

By Leete Doty

The cost of time sharing can be significantly reduced by multiplexing the transmission of data between remote terminals and a computer center.

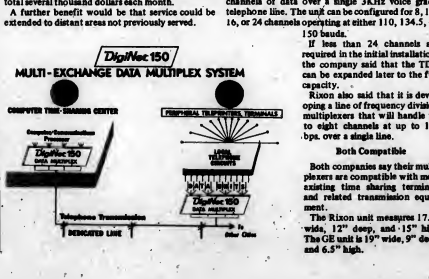
At least two manufacturers – General Electric and Rixon Electronics – are actively working developing multiplex equipment for such use.

AT&T Approves

An American Telephone & Telegraph Co. spokesman said that the telephone company allows multiplexing on its voice grade lines provided that the equipment is interfaced properly.

Multiplexing will allow time sharing centers to take better advantage of dedicated transmission lines by linking more subscribers' terminals to the central processing unit with fewer telephone circuits. The resulting savings from the combining of lines that now serve only one user at a time could total several thousand dollars each month.

A further benefit would be that service could be extended to distant areas not previously served.



In the late fall or early winter, the Communication Products Division of General Electric plans to market a new frequency division data multiplexing system, the DigiNet 150, that will allow 15 channels of 110 baud signals to be combined on a single C4 conditioned telephone line.

On an unconditioned line, the DigiNet 150 can multiplex up to 12 channels of 120 baud signals.

By sacrificing three channels, each type of line can be used to multiplex 150 baud signals.

GE says that its multiplexer allows three channel units to be dropped off or placed in different cities or areas along the line's route.

Rixon System

Rixon reports that it has written more than $1 million in orders for its line of time division multiplexers that it introduced four months ago.

Rixon says its newest multiplexer, the TDX, permits simultaneous transmission of up to 24 channels of data over a single 3KHz voice grade telephone line. The unit can be configured for 8, 12, 16, or 24 channels operating at either 110, 134.5, or 150 bauds.

If less than 24 channels are required in the initial installation, the company said that the TDX can be expanded later to the full capacity.

Rixon also said that it is developing a line of frequency division multiplexers that will handle up to eight channels at up to 150 bps. over a single line.

Both Compatible

Both companies say their multiplexers are compatible with most existing time sharing terminals and related transmission equipment.

The Rixon unit measures 17.5" wide, 12" deep, and 15" high. The GE unit is 19" wide, 9" deep, and 6.5" high.

Editorials

Trademarks and Languages

The approach of providing an automatic means of excluding deviations from a standard is a good one. The Mooers doctrine (see page 10), which is based on this technical point, may or may not be successful in its method of using a trademark as a method of enforcement. The weakness in this is not, as Steele appears to believe, the dangerous actions of other implementers, but is in persuading the user to associate the *integrity* of the product with the name.

The fact that the Fortran name was so easily evaded was based on the fact that the various Fortrans were themselves incompatible. There was no product integrity attached to the word, which simply applied to the whole idea of Formula Translation. So that case is quite different from the case of Trac, where the intent is to protect product integrity.

Computerworld welcomes the Mooers approach and notes that it has the merit of being able to be created quickly; i.e., without those long drawn out standardization processes. Its only weakness apparently lies in whether or not users will differentiate between a product of guaranteed integrity as opposed to products which, although similar, do not have this guarantee.

User interest or apathy, rather than implementer evasions, will decide the fortunes of Trac.

The Slave Masters

The world's most successful civilizations, from a standpoint of creative expression, were made possible by the inhumen practice of slavery. Slaves (or poorly paid servants whose situation was akin to slavery) freed their masters from everyday drudgery and enabled them to lead — if they wished — creative, satisfying lives.

Today computer people are the new slave masters. Our position is unique in history. We are in a position to free people from everyday drudgery, and to do it without exploiting humans.

But while this makes our work immensely satisfying, it also burdens us with the responsibility to see that our slaves, the systems, don't simply create more drudgery by calling for unnecessary input and by flooding the world with unnecessary paperwork.

Let's remember that civilizations have been destroyed by slaves overwhelming their masters.

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Viewpoint

IBM's New 'Service Bureau' Activities Seen Damaging Time Sharing Market

By Joan Van Horn

Joan Van Horn is president of VIP Systems, a Washington, D.C., computer service bureau.

In July [CW, July 31], she charged that IBM's new Call/360 DataText service represents unfair competition to her company's services because IBM has refused to give her the new software and is using computers paid for at the lower, internal rate. IBM has described its action as "fair, vigorous competition."

Unless IBM is prevented from continuing its time sharing service bureau activities, the benefits of modern information management will be unavailable for many years to the potential users who need them most — the small businessman and professional.

Since 1965, IBM has been slowly edging back into the service bureau business, first with Quiktran, then Datatext and Basic. This would appear to be in direct violation of the 1956 consent decree forbidding IBM to engage in service bureau operations. If such is the case, IBM should be enjoined immediately from continuing any service bureau activities. Such action would help assure the continuing development of independent time sharing systems and services that will give business greater value for every data processing dollar spent.

I fear that the total time sharing market will soon be dominated by IBM because of its recently announced pricing, 50% to 60% under current rates quoted by other service bureaus. Such low prices are possible because of internal corporate discounts on equipment and make it almost impossible for any independent service bureau to compete under the standard commercial rates.

Growing Market

Time sharing will be a multibillion dollar market within the next few years. The surface has just been scratched. This market is no longer restricted to the scientific community. It is rapidly expanding to encompass the million-plus medium and small businesses that must automate to combat rising personnel costs but which cannot afford their own computers. A properly programmed time sharing service can provide them with low cost automation that requires almost no commitment to hardware.

Moreover, the businessman need not invest in programming or learn computer technology. And he can retain complete control of, with random access to, his vital business information. He also will have the option of sharing at low cost, large data banks of information relating to his industry as well as many other common data bases that provide facts affecting his business operations. The remote terminal places the computer in his office.

This sort of service for businesses requires system analysis and continuing service support which, because of its personalized nature, cannot be provided by massive corporate entities. It also will require an operational flexibility that encourages continuing innovation in hardware and software.

I have been convinced for many years that the variety of services required by clients of time sharing systems can be provided only by independent service bureaus whose sole vested interests lie in doing a good job for their customers and who are forever free to utilize the hardware-software combination that provides best service for fewest dollars. The prime concern of equipment manufacturers that operate service bureaus must be to maximize their return on the capital investment in hardware and software. Whether or not their particular equipment is the most cost effective is irrelevant. It must continue to produce revenue throughout its obsolescence and beyond, whenever possible.

It would perhaps be advantageous for a manufacturer to buy its way into the time sharing market and, after capturing 70 to 80%, use time sharing as a resting place where machines could age gracefully while continuing to produce revenues for much longer than they might otherwise. Market domination would permit this and even encourage the development of a situation wherein lack of competition relieves the pressure for change and innovation. This would certainly inhibit the growth of the time sharing industry and delay for years the development of equipment and systems necessary to make time shared data processing an integral part of every business operation.

Competitor Elimination

If manufacturers are allowed to set up service bureaus operating with equipment obtained at heavily discounted prices, they will be able to eliminate independent time sharing competitors in short order. In a fast growing and rapidly changing industry, competition speeds technical refinements and expands the total field of knowledge. Without competition, there is little incentive to develop faster, less expensive hardware or software.

Letters to the Editor

PL/1 Headline Questioned

To the Editor:

I have an objection to the headline "IBM Obsoletes the Key PL/1 Manual" [CW, Sept. 4]. While they did obsolete the form number, what they did do was reissue the manual under other form numbers. Specifically, the PL/1 language specification is now form No. Y336003-0. While at the bottom it says restricted distribution, you can always get a copy from your friendly salesman. The reason for this is obvious. IBM does not want to get into trouble with the Justice Department by promising things they cannot deliver, hence these official manuals describe the version of PL/1, while the full language version is the restricted manual.

Richard Wexelblat
Bell Telephone Labs
Holmdel, N.J.

Hmm — you may have a point if people "can always get a copy" despite the restriction. Point is — can they? Ed.

Experience Needed?

To the Editor:

I don't know Neal Wilder, but his article, "Two Years of Experience; Is It A Valid Criterion?" [CW, July 17] is an excellent presentation of a philosophy we have been working with for some time. As one of the EDP schools who is "...graduating people who could be absorbed...," we have been increasingly successful in placing our graduates in companies who find their rigid stand on experience crumbling in the face of the continuing shortage of qualified, experienced people.

These employers are pleasantly surprised to find that graduates of our schools can write programs, do know documentation, and fit readily and easily into the department work routine. We have had more and more such companies tell us how pleased they were to break the college-experience syndrome and find that private school graduates, who are so eager to get into the data processing field that they will spend over $1000 and a year of their time, make excellent, hard driving, and loyal employees.

Mr. Wilder has performed a real service to data processing managers and employers everywhere by adding one more ray of light to a still dark subject. We like to believe that if DP managers and personnel department managers would get past the aptitude test and offer performance examinations in the form of programming problems, they could quickly and effectively determine the abilities of the many applicants available to them once the ill-supported bars of prior experience and college education are lowered. For our part, we would be happy to send to any DP manager or personnel manager requesting it, our final examination or documentation of our case studies for their purpose in evaluating applicants with private school training but no experience.

A. H. Franking, President
Electronic Computer Programming Institute
Minneapolis, Minn.

Has The Mafia Permeated The Computer Community?

A CW Report Part 2

Improving the Security of Files

In the first part of this two part series [CW, Aug. 28], Computerworld *investigated the possibility of Mafia influence in the industry as a follow up to the denunciations of Sen. Edward V. Long and Rep. Cornelius E. Gallagher in* Life *magazine. Because of their positions as leaders of congressional thought relating to computers (and without passing judgment on the truth of the* Life *charges), we first raised the question: has the Mafia already permeated the computer community?*

Our conclusion was that it appeared most unlikely. There seems to be no evidence that computer policies had been adversely affected by organized crime and, indeed, there is evidence that the activities of Long and Gallagher have strengthened our defenses.

However, the fact that criminal influence has not hurt us in the past does not mean that it may not hurt us in the future. *Accordingly, in this article* Computerworld *investigates the weak areas in our current systems and tries to identify just how we can protect ourselves against such influences.*

What Can Compromise Data Banks?

The dangers we must presumably guard against involve the basic misuse of large scale computer files or data banks. This misuse can occur in two major ways:

- Searching the file and extracting from it information one is not authorized to obtain.
- Insertion of information into the file which is incorrect or should otherwise not be there.

There seem to be two weaknesses in current computer technology which would allow a user of a file to obtain unauthorized information without being detected — the input and the output areas.

> **The following steps must be taken if we are to improve the security of our data bases:**
>
> **1. Improve techniques for identifying actual users.**
>
> **2. Develop a method for investigating each unauthorized attempt to use the file.**
>
> **3. Reduce the amount of information divulged, to insure that it is not more than is required to answer a specific question.**
>
> **4. Remove blanket authorizations that allow certain users to ask any type of question, and define questions which can be properly asked.**
>
> **5. Protect the files in such a way that even if they are copied, the data cannot be interpreted without the collaboration of one or more airthorized people.**

Currently we have security measures designed to restrict terminal use to authorized people. However, in many cases it is possible to impersonate an authorized user without being caught.

We must prevent the impersonation of authorized users.

While we authorize people to use the system, we rarely check on the questions which they ask. Yet unauthorized, improper use of systems by authorized personnel has long been a known danger.

We must prevent authorized users from asking improper questions.

Assuming that the question has been properly put and is proper in itself, we now tend to throw the facilities of the data bank open to the inquirer, and to give him copies of all the records which may contain some relevant data. This is basically unnecessary and permits publication of irrelevant and potentially dangerous information.

We must prevent systems from providing unnecessary information — even in answer to authorized users.

Lastly, after the data bank is closed down for the night, it is always potentially possible for someone simply to copy the file in its entirety in a few minutes. This could be done by people working in the installation, by people at various terminals, or even by workers from outside firms assigned to maintain the computer. A file, once copied, naturally loses all security because it can be studied at leisure.

We must prevent the copying of the files themselves.

Can This Be Done?

This is all very well, but is it a technical possibility? These actions are, of course, dependent upon them being technically possible.

Let's look at each in turn.

Can we prevent the impersonation of authorized users?

We can — or at least greatly reduce the probability of impersonation — simply by providing an automatic camera at the terminal which could photograph the sender — just as people cashing checks are photographed in supermarkets. We can also provide for effective investigation of attempts at unauthorized use, by alerting the necessary security area to them in real-time, and in the meantime keeping the terminal user engaged, ignorant of the fact that he is under suspicion. *(Continued on Page 11)*

Measure for Measure

Dropout Activity of MRX-111 Tape vs. the 'Leading Competitor'

The Claim

In its publication, M 206, copyright 1968, Memorex claims, "Extensive testing in lab and field shows MRX-111 at least three times more durable (with one-third the dropout activity) than another leading computer tape."

In the text and insert, the phrase "another leading computer tape" is refined by such phrases as "MRX-111 has only one-third the dropout activity of the leading competitor," "89% of MRX-111 had less than 20 dropouts, compared with 38% for the nearest competitive product."

Justification

The justification of the claim was based on two sets of material: a technical sheet on the D/DA (durability/dropout activity) test developed by Memorex and some of the results obtained by the use of it. These were included in the M 206 brochure as an insert. In addition, a Memorex Monograph, dated Nov. 5, 1967, gave further details of the test procedures.

The one-third figure derived from a series of 71 tests of Memorex vs. "the leading competitor's premium tape." In each of these tests, dropout activity during 50,000 head-feet was noted, and the percentage of tapes with 5, 10, 15 . . . 75 recorded dropouts was charted.

Investigation

The first part of the investigation was to determine exactly what claim was being made. The literature presented three possible claims, the difference between them consisting of the standard against which the Memorex tape was being compared.

The three possible candidates were:

(1) Another leading computer tape.

(2) The leading competitor's premium tape.

(3) The nearest competitive product.

No differentiation was drawn between these three descriptions of what the Memorex tape was being compared to, so *Computerworld* decided that a reader could expect that the quoted figures, or better, could apply to any other computer tape.

This was strengthened by the statement that "MRX-111 has higher durability and lower dropout activity than any other premium computer tape."

We then checked the test which was used. The test turned out to be a shuttle "write and read back" test where 300 feet of tape were being passed under the tape heads. The cumulative number of read failures, which varied from zero to above 75, was counted during 167 passes (or 50,000 head-feet). During this test the tape cleaners were removed from the tape transports, and no attempt was made to differentiate between permanent and temporary errors.

The Memorex literature explained the cleaners were removed so as to accelerate the transient errors. However, the literature said, the "ratio of dropout activity — between MRX-111 and the competitive product — will remain absolute."

To check on this statement we hypothesized a comparison between two tapes where both permanent and transient errors existed, and estimated the results that might have been obtained with and without tape cleaners. We found that the ratios were not the same. See Table 1.

We then tried to identify what tapes the tests had been run on. The brochure included photomicrograms, dated 1966, of the competitive tape. A Memorex spokesman said that the tape concerned had never been officially identified, but that it was "pretty obvious." This led us to conclude that the tape concerned was the IBM Dynexcel tape, which at that time was IBM's premium product. Since that date IBM has stopped marketing Dynexcel in the United States.

Comparison of Ratios Obtained at 50,000 Head Feet With and Without Tape Cleaners

Assumptions

(1) A piece of loose oxide, dirt, etc., will cause 2 dropouts before being removed by the tape cleaners.

(2) A piece of loose oxide, dirt, etc., will cause 5 dropouts before dropping off the tape.

(3) Tape A generates 1 piece of loose oxide every 10,000 head feet, and 1 permanent error at 40,000 head feet.

(4) Tape B generates 1 piece of loose oxide every 3333 head feet, and no permanent errors before 50,000 head feet.

Estimated Tape A Performance

Running with tape cleaners in position, it can be expected to cause 5 x 2 dropouts due to dirt, and 33 dropouts due to the permanent error which will be reported on each of the last 33 passes, giving a total of 43 reported dropouts.

Running without tape cleaners in position, it can be expected to cause 5 x 5 dropouts due to dirt, and again 33 dropouts due to the permanent error, a total of 58 reported dropouts.

Estimated Tape B Performance

Running with the tape cleaners in position, it can be expected to cause 15 x 2 dropouts due to dirt, giving a total of 30 reported dropouts.

Running without the tape cleaners in position, it can be expected to cause 15 x 5 dropouts due to the dirt, giving a total of 75 reported dropouts.

Calculation of Ratios

Comparing the performance of the two tapes with cleaners in position, Tape B with 30 dropouts gives a better performance than Tape A with 43 dropouts. The ratio is 70% in favor of Tape B.

Comparing the performance of the two tapes without cleaners in position, Tape A with 58 dropouts gives a better performance than Tape B with 75 dropouts. The ratio is 77% in favor of Tape A.

Conclusion

The ratio of reported dropouts does not necessarily remain the same when the tests are run with and without the tape cleaners in position.

Verdict

We found that the claim that Memorex MRX-111 has only 1/3rd the dropout activity of the nearest competitive product had been in no way substantiated by our investigation.

The test results were dependent upon the claim that the omission of tape cleaners did not change the ratio, but this claim did not appear to us to be true. The tape which had apparently been used for the tests had ceased to be a competitive product months before the latest reprinting of the Memorex literature.

TLW Computerworld Corner

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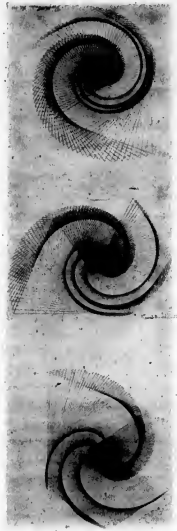
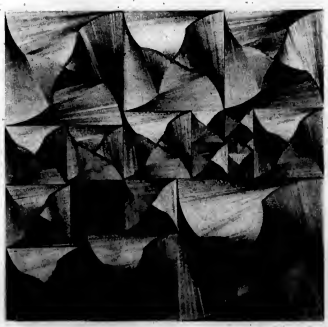
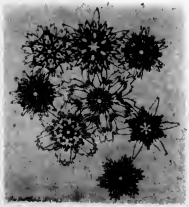
Computer Art Is Called Genuine New Art Form

Computer art, drawn by a plotter under the direction of a computer, has become something of a fad this year, and at least one expert thinks such art represents a genuine new art form.

The computer has definite potential as an art medium and should be thoroughly explored, according to Dr. Thomas S. Fern, chairman of the Department of Art, University of Notre Dame.







Fern said the computer meets the first essential condition of art: it can serve as a medium for human expression. If computer plotting were merely a mechanical matter in which creativity did not play a role, then it would not be a valid art form, he explained.

Similar Art Forms

There are other forms of art in which the artist doesn't necessarily create a finished product with his own hands, Fern pointed out. For example, an architect visualizes the form and substance of a building but leaves the construction to someone else. The fact that the architect produces blueprints, or instructions to the builder, rather than the building itself, does not diminish his creative role. Logically then, Fern added, a human who instructs a computer also is creative and can be considered an artist.

In Fern's opinion, computer produced abstract drawings are more exciting than representational work.

"Orderliness and precision are the outstanding qualities of computer drawings," he observed. "I personally think it's more interesting to see such qualities used in an abstract way than for a literal representation of a scene."

The artist has an obligation to experiment with all new media, Fern added, and the computer should be studied "just as new oils are tried by painters or new plastic materials by sculptors."

Even Oil Paintings

The examples of computer art on this page, among those on display at Univac's new Chicago office, were created by Dr. Don Mittleman, director of the computer center at the University of Notre Dame. The computer center there is possibly unique in that it has used oil paints, water colors, and food coloring as well as ink in creating its art.

The computer art on the facing page was taken from the display by the California Computer Products Co. at the ACM National Conference and Exposition in Las Vegas.

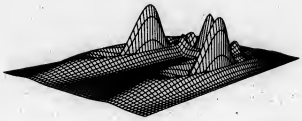
Artist's Approach

Mittleman points out that in all art there must be first, an idea, and second, an embodiment of the idea. The choice of the medium for its presentation is the prerogative of the artist.

By marrying the computer and the plotter, the limitations of both become the limitations of the artist; however, the capabilities of both become his new tools, Mittleman said.

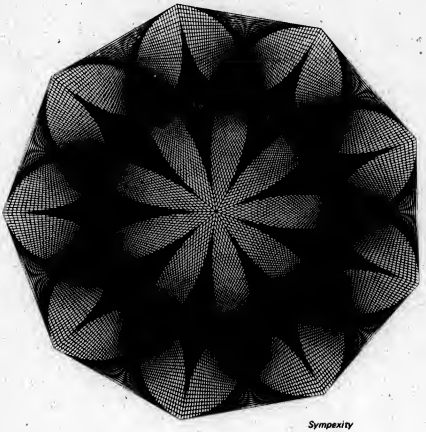
Each of the pictures started as a visualization in his mind, Mittleman explained. This mental image was both guided and limited by what he thought the equipment could do. It became necessary, then, to devise rules which the computer could follow to produce instructions for the plotter.

Probably no one can lay claim to being the world's first computer artist. But the vogue now has reached large proportions, with at least one artist-businessman selling computer originals by mail.



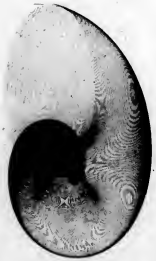
Three Peaks

Hummingbird



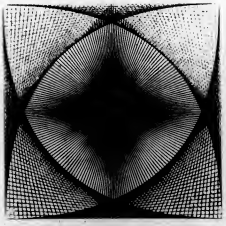
Sympexity

The Fisherman



The Snail

Test Pattern



Crest

The generation gap

Soon after the first announcements of integrated circuit computers, it was apparent that the new generation had a major split down the middle. The third generation had brought a fourth right along with it. Both represented far more power than earlier machines of equivalent size; both scored major new achievements in cost, performance and reliability. But the similarities stopped right there. The third generation switched from transistors to integrated circuits. The fourth generation did that and more. It switched to a whole new concept in computer design: a computer controlled by its own inner computer. The operating characteristics of the overall system are controlled by micro-programming the inner computer. Accordingly, the user can adapt the logic design of the computer to optimize the system for different types of problems. The tremendous flexibility of fourth generation computers derives from their machine language independence and their high degree of problem adaptability. In practical terms, the computer-within-a-computer delivers significant performance advantages at a much, much lower cost.

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Does Trademark Protect Language or Only Name?

The argument about the Trac language and the policy changes being used to protect it from developing multiple dialects is continued in the August *Communications of the ACM* where Calvin Mooers repeated his policies. Tom Steele, in his commentary, agreed with the general idea but said that the approach taken by Mooers seemed ill advised.

Control Through TM

The basic approach has been to make a trademark out of the word "Trac," control the trademark, and through it, control the language. Steele's comment is that the value of the name of the product and not the product is being protected. He saya that no one will feel any legal, moral, or professional compunction against using the basic Trac language in a changed form and calling it, say, "Cart" (Trac backwards). He points out that this had been done in the case of Fortran for various systems, such as Altac, before IBM released the name to public domain.

The current exchange follows an earlier one between Mooers and the current president of the ACM, Bernard Galler, this spring. Both Steele and Mooers seem to agree that the important thing is to provide an "accommodating" method of standardization which is not too rigid, allows for experimental implementation of languages, yet provides the user with the ability to obtain an exact coincidence with one of the various standard levels.

User Guaranteed Standard

The basic idea seems to he to provide the user with something to prevent his being disahled hy nonstandard deviations. This involves providing a switch which causes the processor to convert completely to one of the various authorized standard levels. The difference between this approach and that used in the current Cobol and Fortran standards is that this gives a ceiling which prevents incompatible "extensions" from interfering with the smooth working of the user program. The other approach merely provides a floor on which implementers can build, and users are unable to ohtain the proper purity of the language.

Mooers points out that such a provision which permits the user to move at will between a deviant and a standard state has the important side effect of negating the usual objections to standardization based on the "rigidity of standards."

'Computran,' a Programming Aid, Introduced at ACM Conference

LAS VEGAS, Nev. – Computmatics, Inc., a Chicago based software firm, showed at ACM a group of programs designed to produce Cobol Data Division entries from simple forms which describe the data as a programmer thinks of it on a tape file. The system, called Computran-1, rents for $50 a month and is being tested in user installations in Chicago.

Albert B. Goldstein, Computmatics president, estimates that it can substantially cut programming costs. He also told *Computerworld* that he felt that it was important that it could he used alongside present systems, and did not require special changeover procedures.

Computran-1 is currently running on IBM 360s under DOS and OS and is available for a 45 day free trial to prospective users.

Price of 'Exodus' to Increase 33-1/3 % Beginning Oct. 1, CSC Announces

LOS ANGELES – Computer Sciences Corp. will increase the price of its Exodus translation program hy 33-1/3% to $12,000 on Oct. 1.

The Exodus system converts IBM 1400 computer programs written in autocoder and SPS to IBM System 360 BAL.

Exodus orders received through Sept. 30 will be filled at the current price of $9000.

The price increase results from the recent addition of a number of new features. These include new and improved macro instructions and a new technical manual for program evaluation.

360/30, 1401, H-200 FOR SALE

IPS has for sale and delivery in the near future several 360, 1401, and H-200 systems. A 360-30 65K CPU with many options is available December 1st. Five 2404 I and 2402 I 30KC tapes are available for November delivery. Among the 1401's (all tape-oriented, with 1402 and 1403) are a 12K with 4 729 V's, a 12K with 2 7330's, and a 4K C-3 system. An H-200 20K with card I/O, printer, and 4 44KC tapes is available Oct. 15th. Another H-200 32K card/tape system is available on long-term lease in March, 1969. For prices and details, please call or write.

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COMPUTERWORLD

societies

Lawyers Plan Discussion On Software Protection

WASHINGTON, D.C. — "Legal Protection of Computer Programming" will be discussed at an afternoon session Sept. 12 during the Federal Bar Association's 1968 annual convention here Sept. 11-14.

The program, sponsored by the association's Patent, Copyright, and Trademark Committee, is being coordinated by A.F. Kwitnieski, assistant chief of the Patent Division, Staff Judge Advocate's Office, Air Force Systems Command, Andrews AFB.

Program attendees must be registered, Kwitnieski said.

A. Donald Messenheimer, a private attorney who practices here, will be the program moderator.

Five Speakers Scheduled

Scheduled speakers are:

Kenneth B. Hamlin, director of the Bell Telephone Laboratory in Murray Hill, N.J., who will speak on "Patentability of Computer Programs Under Present Statutes."

Joseph Schimmel, a U.S. Patent Office solicitor, will discuss "Patent Office Viewpoint Concerning Patentability of Computer Programs."

George V. Eitgroth, patent counsel for the Advanced Development & Resources Planning and the International Information Systems divisions of General Electric, will present, "Comments on Patentability and Forging Practice Relating to Computer Programming."

Abe A. Goldman, general counsel for the U.S. Patent Office, will discuss, "Copyright Aspects of Computer Programming."

Morton C. Jacobs, a private attorney from Philadelphia, will speak on, "Trade Secrets, Antitrust, and Other Aspects of Computer Programming."

Systems Meeting Scheduled For Oct. 20-23 in St. Louis

ST, Louis, Mo. – Forty hardware and software seminars, on topics ranging from basic systems to the latest in systems techniques, will be offered at the 1968 International Systems Meeting here Oct. 20-23.

Sponsored by the Systems and Procedures Association, the meeting will be divided into three sections: management topics, technical subjects, and new developments.

Management Section

The management section will cover the training and retention of systems personnel, management by exception, integrating operating systems for management control, and systems conversion.

Speakers will include Thomas L. Holling, executive vice president of Phelan-Faust Paint Co., St. Louis; Jerome Tagg, manager of information technology, Honeywell Controls, Ltd., London; Robert Parsons, Jr., vice president of computer sciences, Eastern Air Lines; C.P. Lecht, president of Advanced Computer Techniques; and 10 other experts in the field.

The technical section will total 18 seminars on decision tables, management information systems studies, operations research, production and inventory control systems, forms design, work measurement, hardware selection, and environmental planning. Speakers will range from a university professor to a corporate director of information systems.

Eight seminars will be devoted to new developments regarding total systems, fourth generation computers, command and control, long-range management information systems planning, and information cost and values.

On the social side, the four day meeting opens Sunday with a reception, followed by a cocktail party Monday, and the Annual Banquet and show Tuesday.

Ladies attending will tour the new Gateway Arch, the St. Louis waterfront, planetarium, and art museum. A fashion show will be presented Tuesday.

Information on the meeting and the association may be obtained by contacting the Systems and Procedures Association, 24587 Bagley Road, Cleveland, Ohio 44138.

'Computer Teacher' To Be Demonstrated

WASHINGTON, D.C. – A computer designed to teach high school and college students about the use of computers and machine language will be demonstrated at the Electronics and Aerospace Systems Convention here Sept. 9-11.

Nearly 100 technical papers will be given and discussed in five sessions during the meeting.

The convention is sponsored by the Aerospace and Electronics Group of the Institute of Electrical and Electronics Engineers (IEEE).

calendar

Oct. 6-10, Montreal, Canada – 10th Annual EDP Conference and Retail Research Institute. Contact: Ethel Langtry, National Retail Merchants Assn., 100 W. 31st St., New York, N.Y. 10001.

Oct. 7-8, Bedford, Mass. – ACM Workshop on Microprogramming. Contact: Samir S. Husson, IBM Systems Research Inst., 787 United Nations Plaza, New York, N.Y. 10017.

Oct. 9-11, Los Angeles, Calif. – "Time Sharing and Remote EDP." Contact: Carole Moss, National Information Research Institute, Airport Office Bldg., 8939 S. Sepulveda Blvd., Los Angeles, Calif. 90045.

Oct. 20-23, St. Louis, Mo. – 1968 International EDP Conference. Contact: SPA, 24587 Bagley Rd., Cleveland, Ohio 44138.

Oct. 21-23, Newport Beach, Calif. – Swap-Coop-Scope (CDC User Group) joint conference. Contact: James Hatch, Saginaw Steering Gear Div., G.M.C., 3900 Holland Rd., Saginaw, Mich. 48605.

Oct. 24-25, Detroit, Mich. – Adapso 24th Management Conference. Contact: Jerome L. Dreyer, Adapso, 420 Lexington Ave., New York, N.Y. 10017.

Oct. 28-Nov. 1, Chicago, Ill. – Bema 10th Annual Business Equipment Exposition, Management Conference and Management Cinema. Contact: Business Equipment Manufacturers Association, 235 E. 42nd St., New York, N.Y. 10017.

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Secure of Data Files Is Immediate Problem

(Continued from Page 5)

Can we prevent authorized users from asking improper questions?

Yes, simply by asking him to input, along with his query, the reason for needing the data. This can be examined, checked with other people if appropriate, and if the explanation is insufficient, the request can be denied.

Can we prevent the systems from providing unnecessary information?

Yes. One method would use the enquirer's reason for needing the information to screen out data irrelevant to the query. What is, and what is not, relevant to particular queries is, of course, a major part of the security system of the data bank.

Can we prevent the copying of the data file?

This is harder. Obviously there are going to be times when the file or parts of it must be copied for backup purposes or technical reasons. It is probably impossible to prevent this.

However, a software system could easily scramble the contents of the data file so that they are unrecognizable, and the unscrambling program could be hugged so that it could operate only as a result of data being requested under normal operating conditions. These precautions, if thoroughly implemented, would make copies almost useless.

It can be seen then that it is technically feasible to protect data bases better than they are currently being protected in many of today's systems. Moreover, it can be seen that the protective methods involve technical matters – hardware, software, and systems.

It can also be seen that in the absence of such protective methods, it is possible for the data base to be compromised despite the security methods used in many areas today. Such activity is certainly potentially within the capability of the forces of organized crime.

Summary

It would appear that the decisive point as to whether the forces of organized crime will be able to compromise our computerized data banks depends in large measure as to whether or not the systems people take appropriate precautions.

COMPUTERWORLD

financial

Firms, Brokers Reviewing News Disclosure Policies

NEW YORK – Companies and stock brokerage firms across the nation are reviewing their procedures for releasing news following two recent jolts to the financial community involving the use of privileged information by insiders.

In the most recent case, the Securities and Exchange Commission charged Merrill Lynch, Pierce, Fenner & Smith – the nation's largest brokerage house – with using inside information about declining earnings when it advised selected institutional clients to sell Douglas Aircraft stock while at the same time it allegedly was advising other clients to buy the stock.

Insider Definition Extended

The Merrill Lynch case followed closely on the heels of the Texas Gulf Sulphur Co. decision by a federal appeals court. In reversing a lower court ruling, the court's opinion extended the definition of an insider by noting that it did not just mean an officer or director, but anyone in possession of material facts about a company that might affect the price of the company's stock.

As a result of the two cases, the SEC is considering changes to its rule 10b-5 which states that an insider may not act on confidential information before it becomes public knowledge.

One of the changes being considered is a requirement that those with inside information must wait a specific period after the information is made public before acting.

However, an SEC spokesman pointed out that drafting a rule flexible enough to cover all situations would be difficult. What may be enough time for some situations may not be enough for others, he said.

"Public Knowledge" a Misnomer

The term public knowledge is somewhat misleading. An SEC official told *Computerworld* that information is considered publicly disseminated when the financial community has had time to absorb it. This usually means its appearance on the Dow-Jones news wire.

This interpretation works to the disadvantage of the ordinary investor who depends, for the most part, on the nation's slower daily press for stock market information.

Speed Hurts Small Investors

The speed with which institutional investors can react can easily damage the investments of many small investors whose access to information is much slower.

This was recently demonstrated when the value of Control Data stock dropped $16.75 Aug. 22, as 927,000 shares changed hands. One trade alone was for 374,000 shares.

In just four trading days, more than $200 million was shaved from the market value of Control Data stock as 1,510,800 shares – about one sixth of the 8.8 million outstanding shares – were sold. Big block trades – defined as 10,000 or more shares – accounted for 750,000 shares.

Memorex, Technicolor Directors Approve Merger of Companies

SAN FRANCISCO – The boards of directors of Memorex Corp. and Technicolor, Inc. have approved the merger of the two companies into a new corporation to be incorporated in Delaware as Memorex Corp.

Memorex President Laurence L. Spitters and Technicolor Chairman Thomas J. Walsh signed the definitive agreement of merger Aug. 23.

Proxy material for shareholder meetings for both companies is in preparation.

The new company will issue one share of its common stock for each share of Memorex common now outstanding and one fourth of a share of its common stock and one fifth of a share of a new issue of $4 cumulative convertible preferred stock with a liquidating value of $100 per share for each Technicolor common share not outstanding.

In addition, Technicolor stockholders will receive a distribution of Technicolor's interests in its nonphotographic businesses with value of about $3.50 per share of Technicolor common stock.

If the merger is approved, the Technicolor photographic products business will be operated as a subsidiary under the name Technicolor, Inc.

New Registrations

COMPUTER SPECIALTIES CORP., 17-51 Pollitt Dr., Fair Lawn, N.J., a computer memory disk manufacturer, filed to register 100,000 common shares. Proceeds, at $7 per share, to be used for equipment and working capital. No underwriter.

COMPUTER STUDIES, INC., 160 Broadway, New York, N.Y., an operator of computer operation schools, filed to register 160,000 common shares. Proceeds, at a maximum of $5 per share, to be used for expansion and other corporate purposes. The underwriter is Carter, Walker & Co., Inc., 45 Wall St., New York, N.Y.

University Computing Offers Plan to Buy Gulf Insurance

DALLAS – University Computing Co. has proposed to the Gulf Insurance Co. board of directors a plan for combining Gulf with UCC through an exchange of stock, and the formation of a new holding company subsidiary of UCC to own Gulf and its subsidiaries.

The total transaction would represent a value of about $200 million.

UCC President Sam Wyly says he resigned as a Gulf director before making the offer.

1-for-2 Stock Exchange

Wyly said the proposal contemplates the exchange of each Gulf common share held for half a share of UCC common stock. UCC presently owns about 700,000 of Gulf's almost three million outstanding shares, which it acquired through a stock exchange on the same basis earlier this year, Wyle said.

Based on current market prices, this exchange would represent an approximate 50% premium over market value to Gulf stockholders, he said.

The plan foresees the creation of a new Gulf Financial Co., which would own Gulf Insurance Co., its life insurance subsidiaries, and Gulf's noninsurance assets.

Wyly said that with the exception of the transfer of outside Gulf officers to Gulf Financial Co. and the resignation of some Gulf directors to join the boards of other UCC companies, the Gulf management and board of directors would continue to operate the company.

The new proposal "is even more advantageous to Gulf shareholders than the earlier exchange by Gulf for UCC stock, which then represented payment by UCC of a 28% premium over the market value of Gulf's stock," Wyly said.

Option Available

Under the proposal, Gulf stockholders whose greater interest is current dividend income may choose to exchange 10 Gulf shares for one share of a new UCC voting preferred stock, which would be convertible into four shares of UCC common stock.

The UCC preferred stock would be redeemable after five years at $700, have a $500 preference in liquidation, and pay a $7.20 cumulative dividend annually, Wyly said.

Earnings Reports

AMPEX

REDWOOD CITY, Calif. – Record sales and earnings for any first fiscal quarter were achieved by Ampex Corp. in the three months ended July 27.

Ampex President William E. Roberts said net earnings, up 20%, were $2,485,000 (26 cents a share) on sales of $58,976,000, up 12%.

SUNASCO

PHILADELPHIA – Sunasco Inc. has reported a loss of $819,138 (36 cents a share) for the nine month period ended June 30, after provision for preferred dividends of $1,293,509 (accumulated and not paid).

The loss for the similar period last year was $417,867 (23 cents a share), after provision for preferred dividends of $1,297,271, the company said.

The operations of Sunset International Petroleum Corp., a former subsidiary which was sold in late January, was responsible for a net change of $1,264,709 against earnings, Sunasco said.

Continuing operations showed an operating loss of $335,481 for the period compared to a loss of $338,437 for the similar period last year, the firm said.

TRANSISTOR ELECTRONICS

MINNEAPOLIS – Transistor Electronics Corp. has net earnings of $42,235 (12.5 cents a share) on sales of $1,031,596 for the fiscal quarter ended July 31. Earnings were up 12% and sales up 24%.

ENGINEERING LABS

FORT LAUDERDALE, Fla. – Systems Engineering Laboratories had total sales of $12,032,000 for the fiscal year ended June 28, resulting in net income of $1,002,000 (50 cents per share). Both figures were reported as the highest in the company's history.

FINANCIAL DATA PROCESSING

NEW YORK – Net income of $3,786,252 ($2.43 a share) on gross revenues of $17,370,032 were achieved during the fiscal year ended May 31 by Data Processing Financial & General Corp. Figures for the previous year were given as net income of $1,727,459 ($1.35 a share) on revenues of $4,774,592.

Wall Street's View

BUNKER RAMO (17) – Brand, Grumet & Seigel, Inc. says the stock, which has good support in the 16 area, could move to the 20 area over the near term.

3M CO. (104-5/8) – Bache & Co., Inc. says that resistance is found in the 106-110 range, and that a close below 98 would represent a danger level.

SANDERS ASSOCIATES (45-3/4) – Hayden, Stone, Appel & Walden reports that it views the stock as a short possibility, but cautions clients to keep in touch by telephone.

SPERRY RAND (47-7/8) – Amott, Baker & Co., Inc. feels that interest should develop in this stock, but then switch away, probably while it is still strong.

SUNASCO (30-1/8) – C.B. Richard, Ellis & Co. says that while further upward progress may be attempted, it anticipates heavy offerings in the 33-35 range, and suggests that the stock be avoided for the time being.

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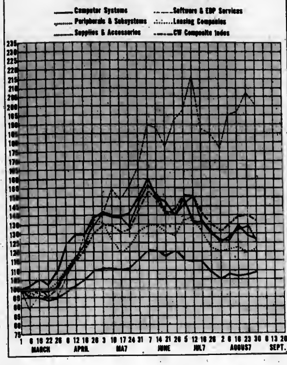
Computer Stocks Trading Index



CW Composite Off As Market Climbs

Computerworld's Composite Stock Index eased off 3 points (2.1%) to 137 for the week ended Aug. 30 as the stock market was up slightly in cautious trading.

The American Stock Exchange price index was off 2 cents (0.07%) to $28.76, but four other leading market indicators showed slight gains: The Dow-Jones industrial average was up 3.67 points (0.41%) to 896.01; the Standard and Poor's industrial average closed at 107.65, up 0.22 points (0.2%); the New York Stock Exchange composite average was 55.44, gaining 0.05 points (0.09%); and the N.Q.B. over-the-counter industrial average stood at 407.32, gaining 1.71 points (0.4%).

Volume Down

Volume for the week on the New York Stock Exchange was 38,592,280 shares, down 7,002,180 shares from the previous week. Volume on the American Stock Exchange was down 3,457,028 shares to 18,510,570 shares.

Control Data led the NYSE list of most active stock for the second consecutive week, closing up 2.4% at 131 on 561,000 shares traded. The previous week, 1,392,000 shares changed hands and the price dropped 17.17% to 128, as investors seemed concerned about rumors of lower earnings for the current quarter.

New Highs, Low

Among the *Computerworld* listed stocks, three issues closed at new highs for the year and one issue dropped to a new low: Datamation Services reached its second consecutive high, closing at 28-1/2, up 2.7%; Computer Network climbed 2.33% to 44; and U.S. Leasing was up 6.85% to 19-1/2; while Computer Applications dropped 2.94% to 20-3/4.

Of the *Computerworld* listed stocks, 37 advanced, 54 declined, and four remained unchanged. The previous week, 41 advanced, 54 declined, and one remained unchanged.

Overall on the NYSE, 789 issues climbed, 721 dropped, and 144 were the same, versus the previous week's score of 806 up, 721 down, and 127 unchanged. Ninety-eight issues reached new highs and 56 new lows, as against the previous week's 146 new highs and 46 new lows.

CW Indexes Mixed

The *Computerworld* stock sector indexes showed mixed activity for the second consecutive week.

The Computer Systems sector continued a generally downward trend since a June 7 high of 161, closing off 2 points (1.5%) at 127.

The Software & EDP Services sector – which contained two of the week's new highs and the one new low – continued its erratic movement, reversing a three week gaining period to close down 7 points (3.4%) at 201.

The Peripherals & Subsystems sector – which has been generally mirroring the Computer Systems sector – reversed a three week gaining period to close at 125, off 9 points (6.7).

The Supplies & Accessories sector showed a gain of 1 point (0.9%), finishing at 109.

The Leasing sector also turned upward, closing at 122, up 3 points (2.1%).

Listing Change

The Memorex listing reflects a 3-for-1 stock split.

COMPUTER STOCKS: TRADING SUMMARY

EXCHANGE	BASE PRICE 3-1-68	1968 RANGE	CLOSING PRICE	COMPUTER SYSTEMS	WEEK NET CHANGE	WEEK % CHANGE	% CHANGE FROM BASE
NYSE	[illegible]	[illegible]	[illegible]	• Burroughs	+ 1 [illegible]	+ [illegible]	+ 28.10
NYSE	[illegible]	118– 84	[illegible] 3/8	Collins Radio	+ 2 1/4	+ [illegible]	− 11.70
NYSE	107 1/8	174– [illegible]	131	• Control Data	+ 2	+ [illegible]	+ [illegible]
AMSE	[illegible]	[illegible]	[illegible]	• Digital Equipment	− 6 3/8	− [illegible]	+ [illegible]
NYSE	87 1/4	[illegible]– 81	[illegible]	• General Electric	+ 7/8	+ [illegible]	− [illegible]
NYSE	38	81– 38	76 1/4	Hewlett-Packard	+ 1/4	+ 0.30	+ 27.08
NYSE	93 1/8	144– 38	116 7/8	• Honeywell	+ 1 3/4	+ 1.83	+ 24.42
NYSE	288 1/2	375–280	335	• IBM	− 2 1/4	− 0.30	+ 16.16
NYSE	103 7/8	133– 38	126 1/2	• National Cash Register	− 1/2	− 0.38	+ 21.76
NYSE	36 7/8	60– 44	36 1/4	RCA	− 1	− 2.12	− 1.33
NYSE	[illegible]	[illegible]	[illegible]	Raytheon	− 3/8	− [illegible]	− 3.16
OTC	30 1/2	[illegible]	44	• Scientific Controls Corp.	− 1	− [illegible]	+ [illegible]
NYSE	78 3/4	114– 78	[illegible]	• Scientific Data	− 1	− [illegible]	+ 14.[illegible]
NYSE	30	[illegible]	[illegible]	• Sperry Rand	+ 3/8	+ [illegible]	+ [illegible]
AMSE	30 1/2	[illegible]	37 1/2	• Systems Engineering Labs.	− 1/8	− 1.78	+ [illegible]

EXCHANGE	BASE PRICE 3-1-68	1968 RANGE	CLOSING PRICE	PERIPHERALS & SUBSYSTEMS	WEEK NET CHANGE	WEEK % CHANGE	% CHANGE FROM BASE
NYSE	[illegible] 3/8	91– 62	77	Addressograph-Multigraph	− 3 1/4	− [illegible]	+ 31.[illegible]
OTC	21	[illegible]– 30	[illegible]	Alphanumeric	− 2	− 3.45	+[illegible]
NYSE	20	27– 20	23 1/4	Ampex	+ 1/4	+ [illegible]	+ 10.76
OTC	17 1/4	27– 16	16	Bolt, Beranek & Newman, Inc.	+ 1	+ [illegible]	− 7.25
NYSE	13 1/2	[illegible]– 12	16	Bunker-Ramo	− 3/8	− [illegible]	+ [illegible]
AMSE	32 1/8	[illegible]– 27	36 3/8	• Calcomp	+ 3/4	+ 2.11	+ 13.23
OTC	29 1/2	48– 20	40	Cognitronics	− 2	− [illegible]	+ 63.26
OTC	12	17– 10	14	Computer Equipment	− 1 1/4	− 8.20	+ 16.67
OTC	15 1/4	23– 13	16 5/8	• Data Products	+ 7/8	+ 5.56	+ 9.02
OTC	18 1/4	27– 18	21 1/2	• Digitronics	− 1 1/2	− 6.52	+ 11.69
OTC	30	[illegible]– 30	[illegible] 1/2	• Electronic Memories	− 2	− [illegible]	+ 1.20
OTC	10	[illegible]– 9	13 1/4	• Fabri-Tek	− 1/2	− [illegible]	+ [illegible]
OTC	20	71– 20	30	Gerber Scientific	+ 2	+ [illegible]	+ [illegible]
OTC	12 1/2	[illegible]– 16	20 1/2	Information Displays	− 2 1/2	−10.87	+ [illegible]
AMSE	16 7/8	[illegible]– 14	30 1/4	Milgo Electronics	− 1 3/8	− [illegible]	+ [illegible]
AMSE	57 1/2	108– 54	81 3/8	• Mohawk Data Sciences	− 4 1/4	− 4.96	+ 41.52
OTC	74	138– 71	94	• Optical Scanning Corp.	− 6	− 6.00	+ 27.30
OTC	18	42– 16	27 3/4	Photon	+ 3/8	+ 2.76	+ 54.16
AMSE	26 5/8	38– 20	26 5/8	• Potter Instrument	− 3/8	− 1.39	+ 3.90
OTC	30 1/4	[illegible]– 30	[illegible]	• Recognition Equipment Corp.	− 10	− 10.52	+111.16
AMSE	10	[illegible]– 14	20	Rixon Electronics	+ 3/8	+ [illegible]	+ [illegible]
NYSE	46 1/4	[illegible]– 23	47 3/8	Sanders	+ 1/2	+ [illegible]	+ [illegible]
OTC	47	[illegible]– 63	70	Scan-Data	− 16	− 17.[illegible]	+ [illegible]
OTC	40 1/4	91– 28	41	• Tally Corp.	− 2	− [illegible]	+ 1.23
NYSE	242 1/4	321–220	279 3/8	Xerox	− 1/4	− [illegible]	+ [illegible]

EXCHANGE	BASE PRICE 3-1-68	1968 RANGE	CLOSING PRICE	SUPPLIES & ACCESSORIES	WEEK NET CHANGE	WEEK % CHANGE	% CHANGE FROM BASE
OTC	[illegible]	[illegible]– 37	[illegible]	• Acme Visible	+ 1	+ [illegible]	− [illegible]
NYSE	20 1/2	[illegible]– 16	16 1/4	Adams-Millis	− 1/4	− [illegible]	− [illegible]
OTC	13 3/8	21– 13	18 1/2	• Baldwin Business Forms	+ 1/4	+ 1.37	+ [illegible]
AMSE	27	[illegible]– 21	[illegible] 7/8	• Barry Wright	—	—	+ [illegible]
OTC	31 1/4	[illegible]– 20	37	Data Documents	—	—	+ [illegible]
OTC	27 1/4	38– 26	32	• Ennis Business Forms	+ 2 3/4	+ 9.40	+ 17.43
NYSE	84 1/8	110– 81	106 5/8	• 3M Company	− 3/8	− 0.35	+ [illegible]
NYSE	18 3/8	28– 16	23 1/4	• Memorex	− 5/8	− 2.62	+ 20.26
OTC	27 1/4	32– 35	**	• Moore Business Forms	**	**	**
NYSE	57 1/4	76– 47	73 3/4	Nashua Corp.	− 1	− 1.34	+ 28.82
OTC	31 1/4	[illegible]– 30	44 1/2	Reynolds & Reynolds	− 1/2	− 1.11	+ [illegible]
OTC	36 1/2	[illegible]– 20	20	• Standard Register	+ 1/2	+ [illegible]	− [illegible]
NYSE	37 3/8	44– 30	[illegible]	• Uarco	− 3/8	− 7.14	− [illegible]
AMSE	14 1/4	22– 13	20 1/8	Wabash Magnetics	+ 1 1/2	+ [illegible]	+ 41.[illegible]
OTC	30 3/4	[illegible]– 24	[illegible] 3/4	• Wallace Business Forms	+ 2 1/4	+ [illegible]	+ [illegible]

EXCHANGE	BASE PRICE 3-1-68	1968 RANGE	CLOSING PRICE	SOFTWARE & EDP SERVICES	WEEK NET CHANGE	WEEK % CHANGE	% CHANGE FROM BASE
OTC	7 1/2	38– 7	17 1/4	Advanced Computer Techniques	− 4 1/4	− 19.78	+130.00
OTC	17	33– 14	20	• Applied Data Research	− 2	− 7.40	+ 47.00
OTC	16 1/2	124– 16	17 1/2	• Aries	− 1	− 5.41	+ 12.90
AMSE	47	[illegible]– 42	[illegible] 3/4	Automatic Data Processing	− 2 1/2	− 4.44	+ 14.[illegible]
OTC	4	[illegible]– 4	[illegible]	Automation Sciences	− 3/4	− [illegible]	+[illegible]
OTC	2 1/2	[illegible]– 2	[illegible] 1/4	• Brandon Applied Systems	− 1/2	− [illegible]	+[illegible]
AMSE	[illegible] 7/8	[illegible]– 20	[illegible] 3/4	Computer Applications	− 3/8	− 2.94	− [illegible]
OTC	8	[illegible]– 7	[illegible] 3/8	Computer Environments	+ 1/4	+ [illegible]	+[illegible]
OTC	30	[illegible]– 36	44	Computer Network	+ 1	+ 2.33	+ 46.67
AMSE	30	64– 36	44 7/8	• Computer Sciences	+ 5/8	+ 1.41	+ 12.61
OTC	38	33– 32	36 1/2	• Computer Usage	− 1 1/2	− [illegible]	− [illegible]
AMSE	36 1/2	61– 36	33	• Computing & Software	− 7/8	− 1.82	+ 46.20
OTC	**	**	**	Comshare	**	**	**
OTC	[illegible]	[illegible]– 16	[illegible] 1/2	Datamation Services	+ 3/4	+ [illegible]	+[illegible]
OTC	[illegible]	[illegible]– 2	[illegible] 1/4	• Digitek	− 3/8	− [illegible]	− [illegible]
AMSE	[illegible] 3/8	[illegible]– 20	[illegible] 1/4	Electronic Computer Prog. Inst.	+ 1/2	+ [illegible]	− [illegible]
OTC	[illegible]	[illegible]– 30	[illegible]	• Informatics	+ 1/2	+ [illegible]	+ [illegible]
OTC	21	[illegible]– 14	14 1/2	Mantrix Corp.	− 1/2	− [illegible]	− [illegible]
OTC	11 1/2	[illegible]– 6	33	• National Computer Analysts	− 2	− 4.61	+[illegible]
AMSE	21	46– 20	27 3/8	Planning Research	− 1/2	− 1.31	+ 21.37
OTC	6	10– 2	11	Software Systems	—	—	+ 22.22
OTC	20 1/2	22– 12	14 3/4	TBS Computing Centers, Inc.	− 3/4	− [illegible]	− [illegible]
OTC	[illegible]	[illegible]– 57	[illegible]	• University Computing	− 8	− [illegible]	+117.40

EXCHANGE	BASE PRICE 3-1-68	1968 RANGE	CLOSING PRICE	LEASING COMPANIES	WEEK NET CHANGE	WEEK % CHANGE	% CHANGE FROM BASE
OTC	[illegible]	[illegible]– 16	+ 2	Boothe Computer	[illegible]	+ [illegible]	+[illegible]
OTC	[illegible]	[illegible]– 16	**	Chandler Leasing	**	**	**
OTC	4 [illegible]	[illegible]– 4	+ 1 1/8	Computer Exchange	[illegible]	+ [illegible]	+[illegible]
AMSE	[illegible]	[illegible]– 21	+ 1/8	• Computer Leasing	[illegible]	+ [illegible]	+ [illegible]
OTC	[illegible]	[illegible]– 11	− 1 1/4	• Cybor-Tronics	[illegible]	− [illegible]	—
AMSE	108 3/8	184– 30	+ 4	• Data Proc. Financial & General	30 1/2	+ 4.82	− 13.25
OTC	12 1/2	17– 6	+ 1/4	Datronic Rental	2 3/4	+ 1.20	− 22.00
OTC	20	[illegible]– 16	+ 1/2	Dearborn Computer	30 1/2	+ 1.11	+127.80
OTC	13 1/4	18– 12	− 1 1/4	• DPA, Inc.	17 1/4	− [illegible]	+ 30.18
AMSE	20 3/8	43– 27	+ 1 3/4	• Greyhound Computer	36 1/4	+ [illegible]	+ [illegible]
AMSE	[illegible]	[illegible]	+ 1 1/8	Granite Equipment Leasing	[illegible]	+ [illegible]	+ [illegible]
AMSE	[illegible]	[illegible]– 41	− [illegible]	• Leasco	[illegible]	− [illegible]	+ [illegible]
OTC	[illegible]	14– 5	− 1	Levin Computer Leasing	[illegible]	− [illegible]	+[illegible]
AMSE	[illegible]	[illegible]	− 1	• Levin-Townsend Computer Corp.	[illegible]	− [illegible]	+ [illegible]
OTC	[illegible]	[illegible]– 7	− 1/4	• LMC Data, Inc.	[illegible]	− [illegible]	− [illegible]
OTC	10 7/8	19– 16	− 1/2	• Management Assistance	2 3/4	− [illegible]	− [illegible]
AMSE	41 5/8	53– 20	+ 3/4	National Equip. Rental	33 3/8	+ [illegible]	− [illegible]
AMSE	30	64– 36	− 1 1/4	• Randolph Computer Corp.	44 3/8	− 2.76	+ [illegible]
OTC	10 1/2	42– 10	—	System Capital Corp.	30	—	+[illegible]
AMSE	10 7/8	19– 10	+ 1 1/4	U.S. Leasing	19 1/2	+ [illegible]	+ 79.31

*Companies included in Computerworld's stock trading index for each sector.

EDPromotions

WAS		IS NOW	AT
Thomas D. Sage	Vice President Equipment Group	Vice President Elmac Division	Varian Palo Alto, Calif.
Donald E. Bolton	District Sales Manager Honolulu, Hawaii	Manager Marketing Education	Control Data Corp. Minneapolis, Minn.
William R. Lonergan	Division Vice President Government Marketing	Division Vice President Programming Planning	RCA Cherry Hill, N.J.
Robert E. Dell'Artino	Vice President	Regional Manager	Greyhound Leasing & Financial Corp. Chicago, Ill.
C. David Key, Jr.	Director Los Angeles Computer Center	Director Computicket	Computer Sciences Corp. Los Angeles, Calif.
Frank A. Maresca	Director of Marketing Commercial Systems Div.	Systems Software Department Head	System Development Corp. Santa Monica, Calif.
William H. Gable	Director Product Operations	Assistant to the President	Scientific Data Systems Santa Monica, Calif.
Ralph G. Nonen	Corporate Director of Information Systems & Data Services	Manager Information Systems	Becton, Dickinson and Co. Rutherford, N.J.
Robert C. Baron	Digital Products Director	Director Advanced Development	Honeywell's Computer Control Div. Framingham, Mass.

T. Sage

F. Maresca

R. Nonen

R. Baron

CSC Gets Software Contract From Emerson Electric

LOS ANGELES – A contract to exceed $500,000 has been awarded to Computer Sciences Corp. by Emerson Electric Co., St. Louis, Mo., to perform systems analysis and programming for the Emerson system called GPATS (General Purpose Automatic Test System). The system is used by the Air Force in testing aircraft electronic equipment at Air Force installations throughout the U.S. CSC's technical personnel assigned to the contract will be based in St. Louis and at Warner Robins A.F.B., Ga.

Four Year Lease

REDONDO BEACH, Calif. – The Systems Group of TRW Inc. has leased from Mauchly Associates, Inc., Montgomeryville, Pa., through a subsidiary, a Control Data 6500 computer system for its software and computing center. Installed under the direction of Dr. Eldred C. Nelson, the system includes two control processors, and will be used to process complex scientific problems encountered in TRW's advanced space and missile research and

CONTRACTS

systems projects. Dr. Nelson said TRW plans to install additional new equipment from Control Data, including remote terminals to make the CDC 6500 accessible to other areas of TRW's Redondo Beach complex.

1401/360 Simulator

NEW YORK – Datamation Services, Inc. announced the sale of a 1401/360 Simulator to an unidentified manufacturer of electrical equipment. Thomas T. Connors, company president, announced that this was a breakthrough in software development, making it possible to run on an IBM 360/40 and up, a program originally written for an IBM 1401 or 1460 computer. The company claims that the SIM 1401 can run in a multitasking environment and the program mix may include 360 as well as other 1401 programs under these conditions. It operates with OS, DOS, and TOS. The purchaser has also placed an order for an additional SIM 1401 to be used with the 360/40, the company said.

Videofile Info System

REDWOOD CITY, Calif. – American Republic Insurance Co. has awarded a $1.3 million contract to Ampex Corp. for a Videofile information system to automate the filing and retrieval of insurance policy documents. The contract was announced jointly by Watson Powell, Jr., president and chairman of the board of American Republic, and William E. Roberts, president and chief executive officer of Ampex. The Videofile system uses television recording techniques to reduce conventional paper files to compact magnetic recordings on video tape. The system will be a major part of American Republic's management information system which includes an IBM 360 512K computer, with mass memory provided by a datacell and 18 disk drives, and 72 Model 2260 display terminals.

Computer Simulator

LOS ANGELES – A computer simulator has been completed for Raytheon Computer, Waltham, Mass., by Programmatics, Inc. The system allows programs written for the Raytheon 730 to be executed and debugged on the IBM 9020.

Reynolds Orders CCA Software For Its 360/40

The R.J. Reynolds Tobacco Co. has ordered a Model 101 high speed information retrieval software system from Computer Corp. of America. The system, to be installed and operating this month on Reynolds' 360/40 computer, will be used primarily for the company's corporate personnel file. Negotiations for the sale were handled by Decision Services International, Inc.

The Scott Paper Co., Richardson-Merrell Inc., the State of Maryland, RCA, the National

Orders and Installations

Broadcasting Co., Gleason Works, The Brown Company, and the Traders Group of Canada are recent purchasers of the Score Information Management system from Atlantic Software Inc.

The City of Pomona, Calif., has ordered an NCR Century 100 system for the purpose of restructuring its government format. The reorganization is designed to provide more effective budgeting and cost control, plus improved municipal service to residents. The first application after delivery next year will be processing utility bills and payroll records. Other on-line computer possibilities are being investigated by Pomona.

C.H. Masland & Sons, Carlisle, Pa., has ordered a Univac 9400 computer system which includes a channel adapter for a 1004 card processor, data line terminal, card reader, printer, and three magnetic tape units.

LARGE SCALE

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Bipolar, 16 Bit IC Memory Is Introduced by Raytheon

LEXINGTON, Mass. – A bipolar, 16 bit integrated circuit memory, the RM-80, designed for scratch pad applications has been announced by Raytheon.

The memory is bit oriented, arranged in a 4 x 4 matrix, and has nondestructive readout. Turn on/off timing is 13 nanosec.

Manufactured by planar epitaxial techniques on a monolithic silicon chip, the circuit is guaranteed to operate over the entire military temperature range, from minus 55 degrees C to plus 125 degrees C.

X and Y input load currents are balanced and can meet a specification of 7 milliamps maximum, resulting in a circuit that is easier to drive.

SDS 7232 storage unit

File Protection Is Disk Unit Feature

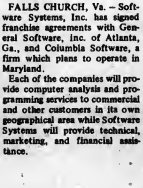
A new, head per track disk storage system, the SDS Model 7231/7232, has an average access time of 17 millisec. The maximum transfer rate is 384,000 bytes/sec. for single sectors and 365,000 bytes/sec. for multiple sectors. The basic addressable unit of information is a sector containing 1024 bytes. Twelve sectors constitute a data track, and each Model 7232 storage unit contains 512 tracks (6,291,456 bytes). For protection of restricted areas of the file, each unit contains 16 write lockout switches. Each switch locks out 32 data tracks. The model 7231 controller sells for $14,000, the Model 7232 for $40,000. Deliveries have begun. Scientific Data Systems, 1649 Seventeenth St., Santa Monica, Calif. 90404.

New Products

Tape Punch

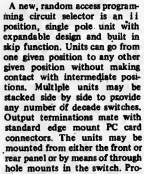
A new, hand operated tape punch, the RTP-1, is priced at $279. It is primarily intended for processing short programs or to augment automatic punching equipment. Two week delivery. Remex Electronics, 5250 W. El Segundo Blvd., Hawthorne, Calif. 90250.

Reader-Spooler



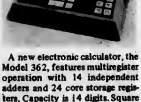
A new photoelectric punch tape reader-spooler, the Remex RRS-3000-7 1/2, is available in unidirectional ($1595) and bidirectional ($1715) models equipped with 7-1/2" reels. The tape feed mechanism is a constant velocity capstan and magnetic rocker and jam roller combination. Self adjusting brakes are mounted adjacent to the read head. The light source is a quartz iodine cycle lamp located inside the reader. Conversion of the beam from a round to rectangular shape is accomplished with fiber optic techniques. Integrated circuits are mounted on two pluggable printed circuit cards and provide either DTL or TTL logic levels. Discrete components can be added as an option for interface with high level logic or relay driver applications. Remex Electronics, 5250 W. El Segundo Blvd., Hawthorne, Calif. 90250.

Circuit Selector



A new, random access programming circuit selector is an 11 position, single pole unit with expandable design and built in skip function. Units can go from one given position to any other given position without making contact with intermediate positions. Multiple units may be stacked side by side to provide any number of decade switches. Output terminations mate with standard edge mount PC card connectors. The units may be mounted from either the front or rear panel or by means of through hole mounts in the switch. Programming Devices Division, Sealectro Corp., 225 Hoyt St., Mamaroneck, N.Y. 10543.

Tab Reader



A new tab reader has been designed for applications in data acquisition and process control. An electrical lockout prevents closure of the contacts before a card is fully inserted and properly oriented. Units can be supplied with a number of different terminations to fit customer requirements. Sealectro Corp., 225 Hoyt St., Mamaroneck, N.Y. 10543.

Calculating System

A new electronic calculator, the Model 362, features multiregister operation with 14 independent adders and 24 core storage registers. Capacity is 14 digits. Square root, logarithm, and exponent operations are included. Priced from $500 to $2295. Wang Laboratories, Inc., 836 North St., Tewksbury, Mass. 01875.

Tymshare Opens New Office

LOS ALTOS, Calif. – Tymshare has announced a new conversational computer service at 2200 6th Ave., Seattle, Wash., to serve the Washington, Oregon, and greater Northwestern region. According to T.J. O'Rourke, president, this is the first in a series of new district offices the company will open in the next two months.

EXPANSIONS

Systems Engineering Labs Represented in Japan

FT. LAUDERDALE, Fla. – Systems Engineering Laboratories has entered into a sales agreement with Kyokuto Boeki Kaisha, Ltd., Tokyo, for the sale of computers, peripheral equipment, and system products in Japan, South Korea, Formosa, and the Republic of the Philippines, according to Richard D. Felty, vice president of the Florida firm.

Macro Corp. Moves To Larger Quarters

BLUE BELL, Pa. – Macro Corp., computer consultants, announced it has moved to new and larger quarters in the Ft. Washington Industrial Park. The company services real time and process control computer systems.

Keydata Opens New Haven Office

WATERTOWN, Mass. – Keydata & Adams Associates, Inc. announced that the Keydata Division has opened a sales office at 29 Whalley Ave., New Haven, Conn. John T. Gilmore, Jr., president, said that Peter D. Cokin has been appointed sales representative for Southern Connecticut. This move follows the opening of an office in Hartford, Conn.

Varian to Open European Offices

IRVINE, Calif. – A sales and service organization is being set up throughout Europe by Varian Data Machines. Headquarters for the European organization will be in London with offices located in Solna, Sweden; Zug, Switzerland; Paris, France; Frankfurt, Germany; Amsterdam, the Netherlands; and Brussels, Belgium.

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Software Systems Franchises 2 Firms

FALLS CHURCH, Va. – Software Systems, Inc. has signed franchise agreements with General Software, inc. of Atlanta, Ga., and Columbia Software, a firm which plans to operate in Maryland.

Each of the companies will provide computer analysis and programming services to commercial and other customers in its own geographical area while Software Systems will provide technical, marketing, and financial assistance.

ACM Show Doesn't Live Up to Hopes

(Continued from Page 1)

search in detail, although binary searches are among the most elementary computer strategies, and have been for many years. Another assumed that everyone understood what arborescences were, and how to take advantage of them while programming data handling.

Dick Brandon gave his usual, very effective condemnation of the situation in most programming shops, pointing out that we do not know how to select programmers and tend to select those with undesirable characteristics. He also attacked managers as being ineffective, bringing out that they had not been given proper management training or even the basic tools of disciplines with which to work. His solution involved, at the minimum, the amalgamation of ACM, DPMA, and SPA, and the funding of some significant research. Without this, he felt, the outlook would be bleak.

Action Said Vital

Carl Reynolds of Computer Usage Development Corp. disagreed that management was not possible or even was worse in the data processing field than elsewhere. Acknowledging that it was difficult, he said that a manager could do a good job provided that he "did his homework." He demanded that programmers be made to estimate the size and time involved in a job, that they report what has actually been done, and what has not (as opposed to 50% complete type of reports), and that the manager, after getting the reports, should take necessary action. Reynolds agreed that the failure to take action on a report was the fundamental error.

Immature Managers

Reynolds also pointed out that as yet, most of the managers are really amateurs. "I know a 30 year old man who was accused by his top management of causing the loss to his company of $2 million because he was three months late in a programming task," Reynolds said. "There were six levels of management between the man who made the accusation and my 30 year old friend. It simply is unfair to pretend that he was really the responsible party or ready for handling projects of that size."

Programming Efficiency Ignored

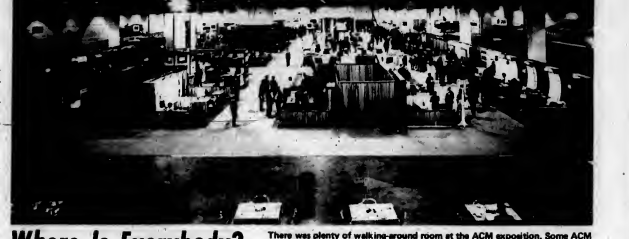
There were items being exhibited outside the lectures which, although germane, were not mentioned, including the increased productivity possible with questionnaire languages such as Neat/3 on the NCR Century or with precompilers, such as the new Computran. Both seem to provide hope for higher programming productivity and on-time-ness, but the impact of such developing software technology was not mentioned.

In other conference sessions, the FCC computers and communications inquiry was discussed by FCC staff member Ernest Nash (who also thanked the ACM for providing a series of seminars for members of the commission staff). He pointed out that the commission was not sitting still while the inquiry went on, but admitted that it might be long and drawn out. He called attention to the Telpak case in which the attempted underpricing of lines by AT&T, which would have resulted in favoritism for large concerns, had been stopped and the ordinary person given a fair deal.

A paper by M.A. Duggan on the possibilities of the Bell System's Electronic Switching System being able to take over much of the data processing load in the country was received with considerable interest. His conclusion that it was practical was supported by D. Farber of the Rand Corporation who commented from his knowledge of the ESS gained while working for the Bell System. Farber also pointed out that while the current system could be upgraded, it was also capable of having big computers placed in the nodes of the switch network to provide a computer service bureau operation. Other panelists felt this was a political, not a technical, matter and that the only area where a small company could seriously compete was where software was involved.

Popular Festival

Local interest in the conference was restricted to the computer art and music festival which got over 20 minutes of local TV exposure. As a result, it was believed that attendance at the festival jumped from about 300 on the first day to 900 on the second and third.



Where Is Everybody?

There was plenty of walking-around room at the ACM exposition. Some ACM officials blamed the sparse attendance on the timing and the site of the conference.

One of the highlights, and innovations, of the conference was the international panel. Left to right are Paul Armer (U.S.), Yoshio Arai (Japan), Carl Hammer (U.S.), Ken Fan (Japan), moderator Walter Bauer, R. Deleglise (France), Stanley Gill (England), and Dan McGurk (U.S.)

AT&T Files New Tariff With FCC

(Continued from Page 1)

reconsideration of the June 27 decision.

Romnes noted that the new tariff will change "some of the ground rules applying to the connection of customer owned terminal devices to the telephone network."

Some Limitations

And AT&T Vice President D.E. Emerson, in a letter to FCC Secretary Ben F. Waple accompanying the proposed tariffs, noted that "in order to protect the functioning of the network, network control signalling (i.e., the transmission of signals into the telephone system which perform supervision, number identification, and control of switching machines) will continue to be performed by facilities furnished by the telephone company."

"For this reason," Emerson continued, "the proposed tariff regulations at this time retain the existing regulations relating to the connection of customer provided communications systems, with the addition of a provision for connection of private mobile radio systems either through an acoustic-inductive device provided by the customer, or through a connecting arrangement provided by the telephone company."

Gilmer noted that perhaps the most significant part of the new tariffs was the new optional arrangement for connection of customer data terminal equipment.

"Up to this point, such connections have been made through the telephone company's Data-Phone sets," he said.

The New Option

Now, Gilmer said, customers will have this option: They can continue to use telephone company Data-Phone sets, or they can provide their own modulating functions, now provided by the Data-Phone set.

"This modem would be used in conjunction with a telephone company protective connecting arrangement and network control device . . . to limit the power and bandwidth of the signals put into the network by the customer's equipment, Gilmer said.

According to Gilmer, the connecting device will rent for about $2 a month, compared with monthly charges of $5 to $80 for the Data-Phone.

An AT&T spokesman added that the device will have an installation fee that varies with each operating company. Hooked up for data operation, the charge by most companies will be $5, and hooked up for voice operation, there will be no charge by most companies, he said.

Product a Success, Company Dumps It

(Continued from Page 1)

and receives its input from punched cards, punched tape, or a teletypewriter. The program was written by Applied Data Research, Inc.

With a memory that can hold up to 150 sequences of scenes, the system works on a preset switch that can control any number of video and audio sources. The current time as well as scene duration and description of the scene on the air, preset scene, and five subsequent scenes are indicated on a 17" CRT monitor. An automatic logging teleprinter records each scene as it occurs.

A supervisor controls the program from a keyboard with which he can build scenes or modify any portion of any scene at any point of time in the computer's memory. The system also has an override feature to allow the supervisor to take over manually.

Out of Its Line

Abel Dehann of AMP told *Computerworld* that as the new system was out of the mainstream of AMP's business (the manufacture and sale of electrical connectors and terminals, mostly for OEMs), its manufacture would require large capital expenditures.

In order to keep ahead of the competition – a number of other computerized switching systems, some of them much larger, are in use today – AMP would have to develop a whole line of equipment, Dehann said. The company finally decided that it could get a better return on its investment if the money were put into other things, he said.

AMP came to design the automated switching system as the result of its supplying switches to the television industry over the past three years, Dehann said. It was a natural development that was successful, but the company now just wants out, he said.